MODULE VI - POST-CLOSURE GROUNDWATER CORRECTIVE ACTION

VI.A. POST-CLOSURE CORRECTIVE ACTION PROGRAM

The Permittee shall institute a Corrective Action Program CAP (CAP) as specified in R315-8-6-11. The purpose of this program shall be to remove from or contain hazardous constituents in the groundwater and to monitor the migration of the hazardous constituents as outlined in Module V. The CAP shall be submitted no later than 90 days from the issuance of this permit. This CAP shall follow requirements of R315-8-6, this permit, and as specified. Upon submittal of the CAP, the Executive Secretary will review the plan and either approve or disapprove the CAP. If the CAP is not approved, Thiokol will provide corrective solutions to the CAP deficiencies within 60 days of notification. If the CAP resubmittal is not approved, the Executive Secretary will modify the CAP and this will become the approved version.

VI.A.1. Within 90 days of approval of a Corrective Action Plan (CAP), per Condition VI.A, the Permittee shall provide compliance wells for the corrective action systems which shall follow the provisions of Module V. These monitoring wells shall also be identified as compliance wells.

VI.A.2. Upon approval of the CAP by the Executive Secretary, the Permittee shall implement the CAP, in a manner which will prevent hazardous waste constituents from exceeding their respective detection and/or concentration limits, as defined by Condition V.C., at the Compliance Point.

VI.A.3. Within thirty days of approval of the CAP by the Executive Secretary, the Post-Closure Cost Estimate of Condition IV.B. shall be up-dated and amended to account for any and all costs associated with the CAP.

VI.A.4. The CAP shall be protective of human health and the environment.

VI.A.5. The CAP shall contain procedures for sampling the groundwater in the uppermost aquifer, the groundwater as it enters and exits the groundwater treatment units, or containment system and measure the volume and rate of flow of groundwater through the groundwater treatment system or containment system as indicated in Module V of this permit.

VI.A.6. If the Permittee submits for the approval of the Executive Secretary, a plan describing additional measures that may be used to enhance proper containment or removal of the hazardous constituents specified in Condition V.B.1.a., it shall be deemed a Class 3 modification and the provisions of R315-3-15 must be followed. This plan may consider several options for additional measures such as pulsed pumping, installation of extraction wells, sparging in hydrodynamically isolated areas, and additional characterization and modeling of contaminant transport in the fractured bedrock.

VI.B. DESIGN OF THE GROUNDWATER TREATMENT OR CONTAINMENT SYSTEM

VI.B.1. The Permittee shall submit as part of the CAP engineering plans for treatment and/or containment of all hazardous constituents identified in Condition V.B.1.a. These engineering plans must be submitted within 90 days of the effective date of this permit, as specified in R315-8-6 for a CAP.

VI.B.2. The Permittee shall provide a summary of the effectiveness of the groundwater treatment and/or containment system in meeting the specifications of any remediation scenario and included in the semi-annual report as indicated by Condition V.F.4.

VI.C. GROUNDWATER TREATMENT OR CONTAINMENT SYSTEM

VI.C.1. The Permittee shall submit for approval by the Executive Secretary a Construction Report describing the design details for all elements of the groundwater treatment or containment system listed in Conditions VI.B.1., and as specified in V.D.1.m. This report shall be submitted within 60 days of approval of the groundwater treatment or containment system.

VI.C.2. The Permittee shall submit an inspection schedule for the inspection of all parts of the groundwater treatment or containment system. This schedule shall be submitted and shall be approved by the Executive Secretary prior to operation of any system.

VI.D. TREATMENT OF HAZARDOUS CONSTITUENTS

As part of the CAP, the Permittee shall submit a list of any hazardous constituents in addition to those listed in Condition V.B.1.a, which shall be treated or contained in the groundwater. As part of this submittal proposed concentration treatment levels of hazardous constituents shall be included for approval by the Executive Secretary.

VI.D.1. If the Executive Secretary receives information demonstrating that the treatment or containment system is not removing hazardous constituents to acceptable pre-approved levels specified in VI.D above, the Permittee shall install additional treatment processes (e.g. carbon adsorption, air-stripping, and soil sparging) to treat the groundwater to meet the requirements of Conditions VI.D.

VI.E. WELL LOCATION INSTALLATION AND CONSTRUCTION

VI.E.1. If extraction wells and/or injection wells are used, construction shall follow the techniques described in the Technical Enforcement Guidance Document (TEGD), OSWER-9950.1, September 1986. If techniques other than those described in the TEGD are used, the techniques must be approved by the Executive Secretary prior to installation of the extraction and injection wells.

VI.E.2. If the Permittee generates groundwater contaminated with hazardous constituents from the following processes: 1) development of newly constructed piezometers, monitoring wells, extraction wells, and injection wells; 2) sampling of monitoring wells; and 3) water generated from treatment units and piping. Disposal of water generated from the processes listed above shall be as follows:

VI.E.2.a. Prior to approval of the As-Built drawings and description of the treatment or containment units, the Permittee shall dispose of all groundwater generated from these processes at the M-705 wastewater treatment system or at a permitted Treatment Storage Disposal Facility (TSDF).

VI.E.2.b. After approval of the As-Built drawings and description for the treatment or containment units, the permittee may process these waters through the treatment units, unless the waters contain unacceptable heavy metals.

VI.E.2.c. Unless it can be demonstrated that heavy metals are not present in the groundwater, all water generated from wells in which heavy metals has been detected in past sampling events shall be processed through the M-705 wastewater treatment system or an permitted TSDF.

VI.E.3. Additional treatment or containment systems shall be installed to maintain compliance if subsurface conditions significantly change after permit issuance. Such changes may include, but are not limited to, groundwater level elevation, direction of groundwater flow, and increases in the concentrations of hazardous constituents in the groundwater.

VI.E.4. If hazardous waste constituents exceeding the groundwater protection standard concentration limits as defined in Condition VI.D., are detected in hydraulically downgradient monitoring well(s), the Permittee shall install additional wells further downgradient.

VI.E.5. The Permittee may be required to install additional wells at any time during the post-closure period if new information or unforeseen circumstances reveal a need for additional removal of contaminated groundwater to protect human health and the environment. Installation of new wells shall constitute a permit modification under the terms of this permit and as specified in Condition V.H.2.

VI.E.6. Within 90 days of completion of wells installed after permit issuance, the Permittee shall submit well completion reports as applicable to the sub-surface matrix including but not limited to: boring logs; sieve analysis (grain size); standard penetration tests; analytical tests performed on soils; water level elevations; groundwater contour maps; well development results including recharge rates; cross sections or fence diagrams; as well as all other data.

VI.E.7. All wells shall be maintained in a fully operational condition for the duration of this permit. The Permittee shall notify the Executive Secretary in writing within seven (7) days when a well is no longer properly functioning (including a marked change in pumping rate, presence of sandy or silty materials, and cracked or broken casings) or when the Permittee intends to abandon one or more wells associated with groundwater treatment system. The Executive Secretary shall approve the conditions for replacement or correction of improperly operating well(s).

Replacement of damaged wells shall constitute a Class 1 permit modification.

VI.E.8. The Permittee must receive the approval of the Executive Secretary in order to permanently remove wells from the groundwater system. Removal of wells shall constitute a Class 2 permit modification. All wells deleted from the groundwater system shall be plugged and abandoned in accordance with the procedures specified in Attachment 6. Well plugging and abandonment methods shall be submitted to the Executive Secretary thirty (30) days prior to the date the wells are to be removed from the monitoring program.

VI.F. OPERATION OF THE GROUNDWATER TREATMENT SYSTEM

VI.F.1. The Permittee shall maintain and operate the groundwater system(s) as specified in this permit.

VI.F.2. The Permittee shall operate the groundwater system(s) in a manner that will prevent spills, releases, or other adverse affects to human health and the environment and as specified by Condition VI.C.

VI.F.3. The Permittee must submit for the approval in writing by the Executive Secretary a personnel training plan prior to operation of any new treatment system. The Permittee shall train all personnel operating the groundwater system(s) as outlined in Condition II.C.

VI.F.4. The Permittee shall submit a Preventative Maintenance Schedule for ant new treatment system(s). This maintenance schedule shall include all parts of the groundwater system(s) as specified in Condition VI.C., and any other parts of the system not specified above. This schedule must be approved by the Executive Secretary prior to operation of the groundwater system(s).

VI.F.5. If a groundwater flow model and/or groundwater solute model are used the Permittee shall take any action necessary to maintain the groundwater system(s) as indicated by annual recalibration of those models.

VI.F.6. The Permittee shall not allow contaminated groundwater to remain in any unit or piping for a period exceeding ninety (90) days. The Permittee will

remove the contaminated groundwater prior to the end of the 90 day period and dispose of the groundwater as indicated in Condition VI.E.3.

VI.F.7. The Permittee shall implement the additional measures specified in Condition VI.A.1. within 90 days after approval of the measures by the Executive Secretary.

VI.F.8. The Permittee shall monitor the effects of the groundwater system(s) as specified in Condition V.D.4.a. and b., and if any off-site groundwater is affected, the Permittee must notify the Executive Secretary within (7) seven days.

VI.F.9. The Permittee shall implement the Contingency Plan specified in Condition II.E.2.

VI.G. DURATION OF CORRECTIVE ACTION PROGRAM

VI.G.1. If the Groundwater Protection Standard is met during and after the Corrective Action Period, the Permittee shall continue corrective action until the Groundwater Protection Standard has not been exceeded for three consecutive years.

VI.H COST ESTIMATES FOR CORRECTIVE ACTION

The corrective action plan required by Condition VI.A. shall provide a cost estimate of the actions required by Condition IV.B.

VI.I FINANCIAL ASSURANCE FOR FACILITY CLOSURE

The Permittee shall demonstrate continuous compliance with R315-8-8. by providing documentation of financial assurance as required by R315-8-8 including provisions for corrective action. Upon approval of the corrective action plan and cost estimates by the Executive Secretary, the Permittee shall within thirty (30) days of that approval ensure that financial assurance exists for implementing and maintaining the approved corrective action plan. Changes in the financial assurance mechanism must be approved by the Executive Secretary pursuant to R315-8-8.